SQXF Coil QA and Measurement during Winding and Curing

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QA and Measurement for Coil1

- Monitoring coil to ground short
- Coil to parts electrical short test
- Coil electrical measurement after winding and curing (R, Ls, Q)
- Winding mandrel rotation angle
- Each turn cable measurement during winding (angle and location at the end nose)
- Coil measurement after winding and after curing (coil length, coil end)
- Pole gap and wedge gap

Coil to Ground/Part Short Test

- Ω meter is set up to monitor cable to ground short through the winding
- Connect each end part to ground to check part to cable short
  1. After installing wedges
  2. After finishing winding
  3. After finish curing

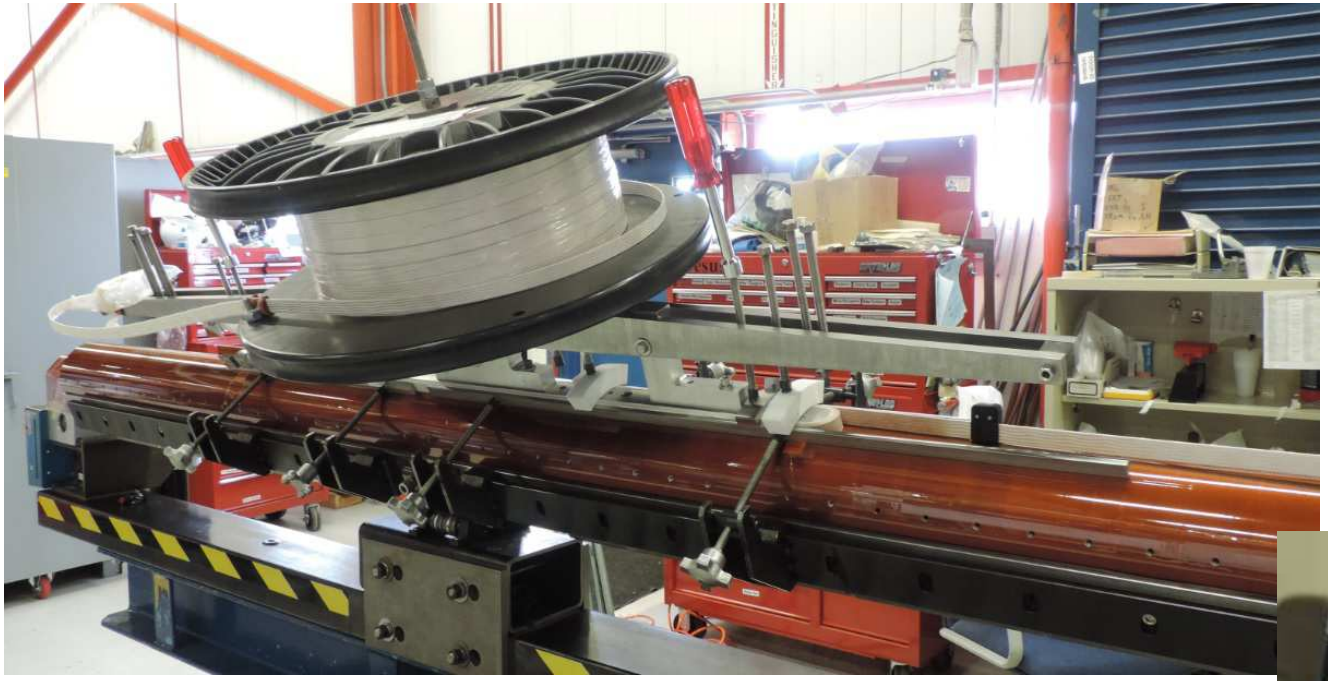
Coil Electrical Measurement

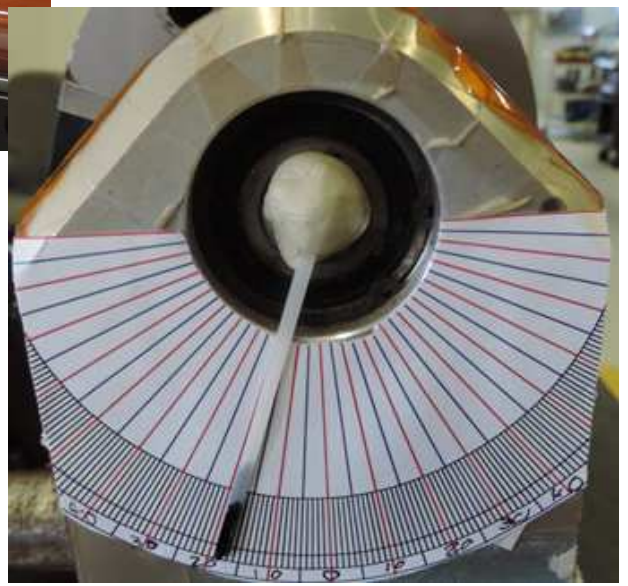
- **Resistance: from IL lead to OL lead**
  - SQXF coil 1: 0.164 Ω
- **Inductance and Q value**

SQXF Coil 1

	20 Hz	120 Hz	1 kHz
Ls (mH)	3.298	3.085	2.305
Q	2.26	5.32	3.02

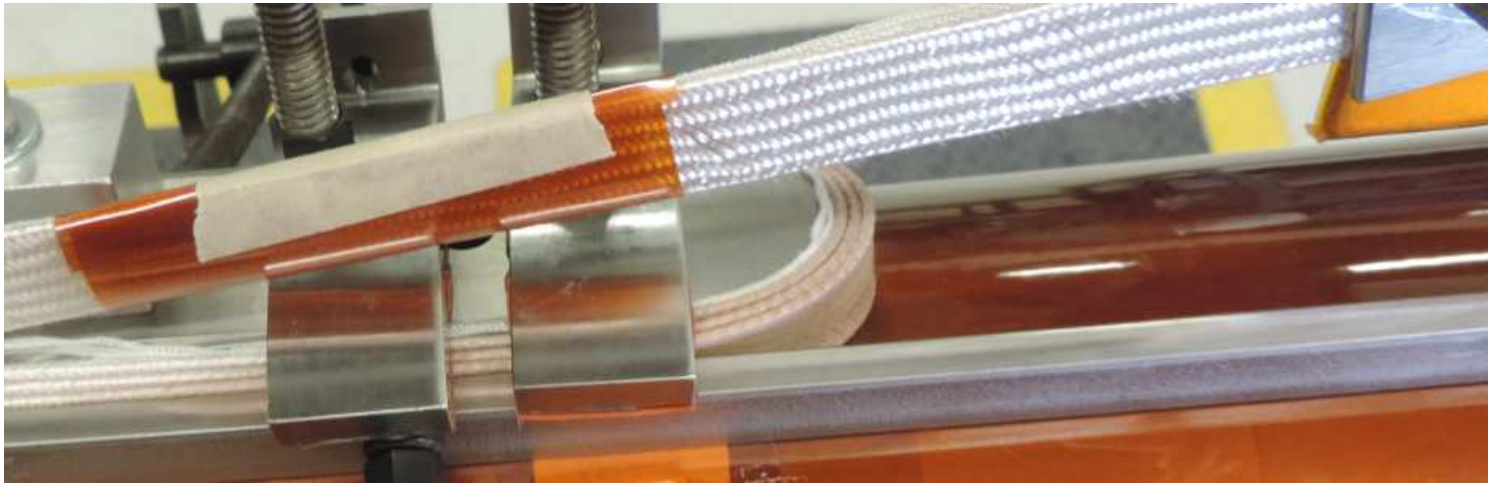
Winding Mandrel Rotation



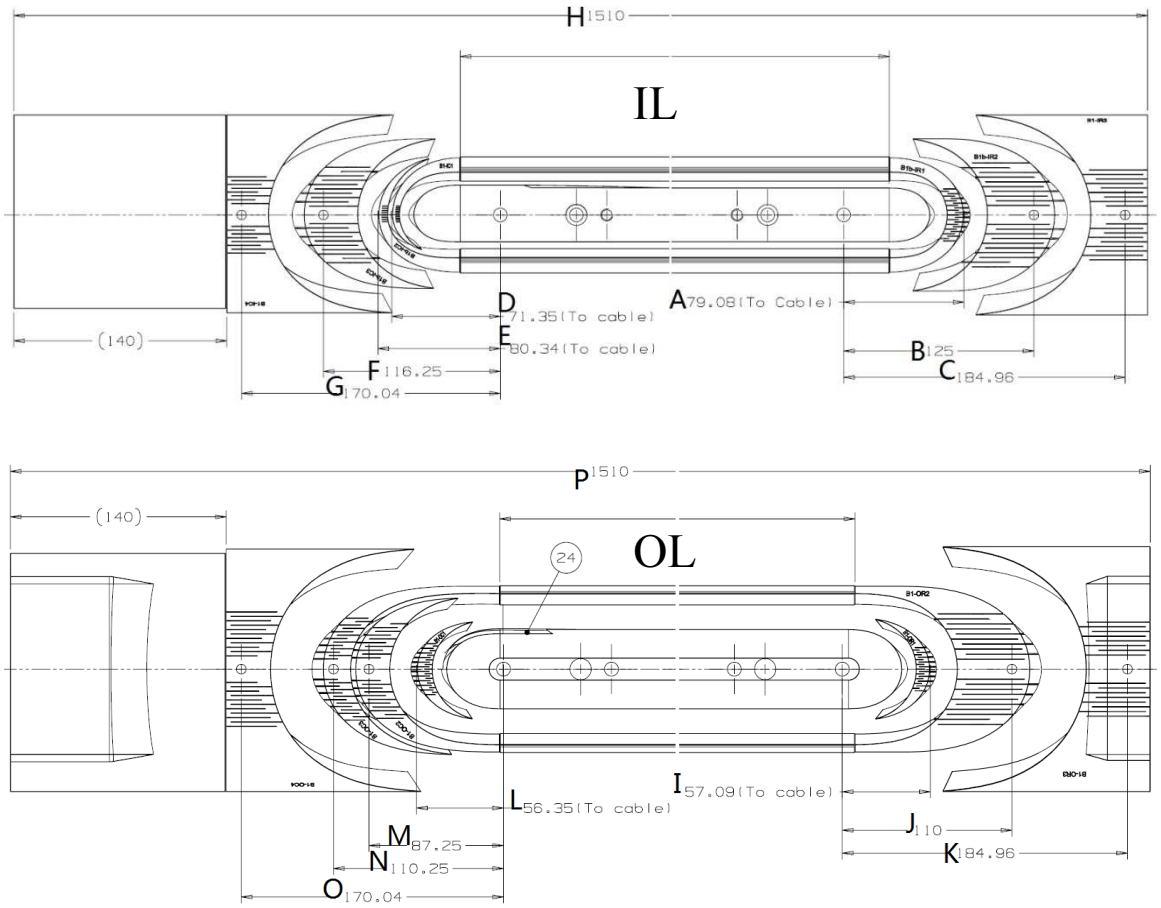


- The mandrel angle is measured at exit position when the cable wind around the end
- This angle remain constant when the cable wind along the straight section

Each turn cable measurement



Coil measurement



- Coil end measurement
  1. Install pins
  2. Measured with caliper between the edges of pins
  3. Subtract by the radii of the pins
  4. Record the distance

- Coil length
  1. Measure the overall length of the winding mandrel
  2. Measure the distance between RE saddle and RE of the winding mandrel
  3. Measure the distance between LE splice block and LE of the winding mandrel
  4. Subtract 1 by 2 and 3
  5. Record the coil length

Pole Gap and Wedge Gap

- **Measured with caliper**
- **Pole gap**
  - Original gap (L1)
  - After winding (L1 and L2)
  - After curing (L1 and L2)
  - After release tension (L2)
  - After reaction (L2)
- **Wedge gap**
  - Original gap = minimum pole gap + 3 mm
  - After winding
  - After curing
  - After release tension
  - After reaction